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Supporting Information

Antimonene: A novel 2D-nanomaterial for supercapacitor applications

*Emiliano Martínez-Periñán, Michael P. Down, Carlos Gibaja, Encarnación Lorenzo, Félix Zamora*and Craig E. Banks**

Table S1. Weight and atomic percentages obtained by EDX of 36 ng antimonene/SPE surface.

Element	Wt%	At%
CK	84.41	90.01
OK	11.89	09.52
SbL	03.69	00.48
Matrix	Correction	ZAF

Table S2. Specific capacitance data at F/g obtained during CVs measurements using different amounts of antimonene modified SPE at different scan rates.

	Antimonene mass (ng)				
Scan rate (V/s)	**1.8**	**3.6**	**9.0**	**18.0**	**36.0**
0.025	8549	6747	2816	2789	1587
0.050	8361	6091	2679	2536	1442
0.075	8246	5790	2537	2365	1347
0.100	8187	5609	2428	2249	1277
0.250	7975	5075	2113	1909	1102
0.500	7538	4498	1843	1617	957

Table S3. Specific capacitance values (F/g) obtained from charge-discharge profiles for different amounts antimonene modified SPEs at different specific currents (A/g).

1.8 ng Antimonene		**3.6 ng Antimonene**		**9.0 ng Antimonene**		**18.0 ng Antimonene**		**36.0 ng Antimonene**	
I (Ag^{-1})	**C (Fg^{-1})**	**I (Ag^{-1})**	**C (Fg^{-1})**	**I (Ag^{-1})**	**C (Fg^{-1})**	**I (Ag^{-1})**	**C (Fg^{-1})**	**I (Ag^{-1})**	**C (Fg^{-1})**
28	1547	14	1573	6	848	3	499	1	196
56	1446	28	1514	11	765	6	427	3	163
278	1115	139	1316	56	613	28	433	14	123
556	994	278	1005	111	475	56	304	28	111
1111	923	556	932	222	439	111	277	56	104
2778	878	1389	895	556	413	278	229	139	99

Figure S1. SEM images of antimony crystals before (a) and after ball-milled process (b). Notice an evident size reduction of the crystal dimensions and a more homogeneous crystal size after ball-milled treatment. Statistical analysis of the particle size (based on 100 particles) of antimony crystals before (c) and after ball-milled process (d).

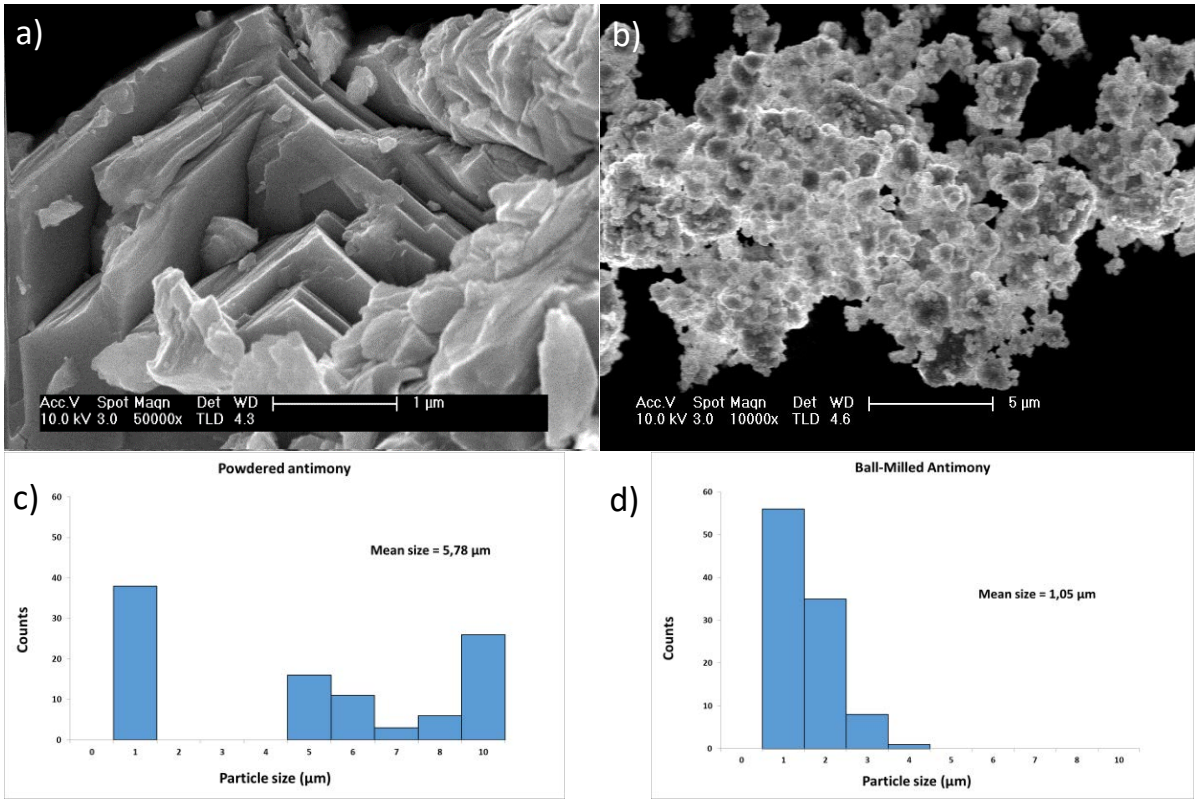

Figure S2. Photograph of a dispersion of exfoliated FL-antimonene in 2-propanol:water (4:1) showing Faraday-Tyndall effect and the analysis of the variation of its concentration within the time.

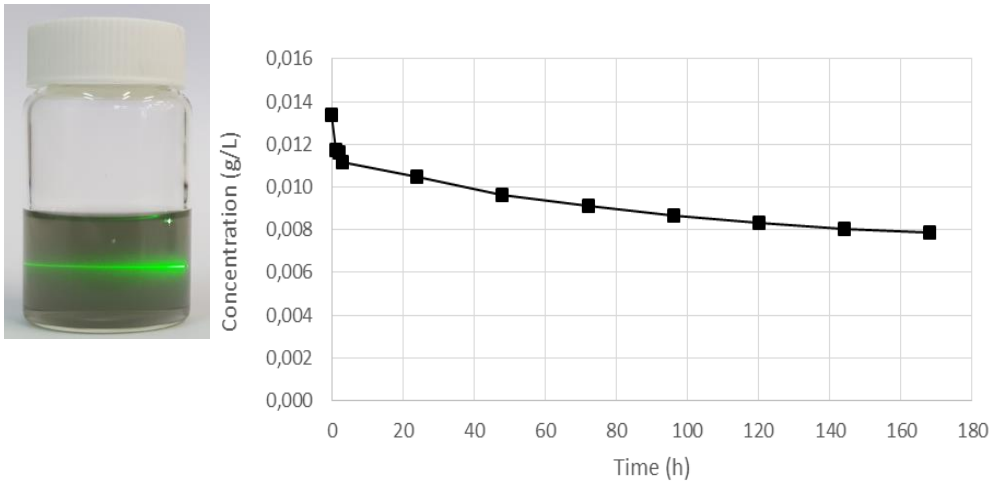

Figure S3. Representative large topographic AFM images showing different areas with few-layer antimonene flakes. Solid lines correspond to the profiles along the coloured lines, showing step heights multiple of ~ 4-5 nm. Notice the angles observed in the edges of the flakes, mainly multiples of 60 º, as expected for a hexagonal structure of β-antimony.

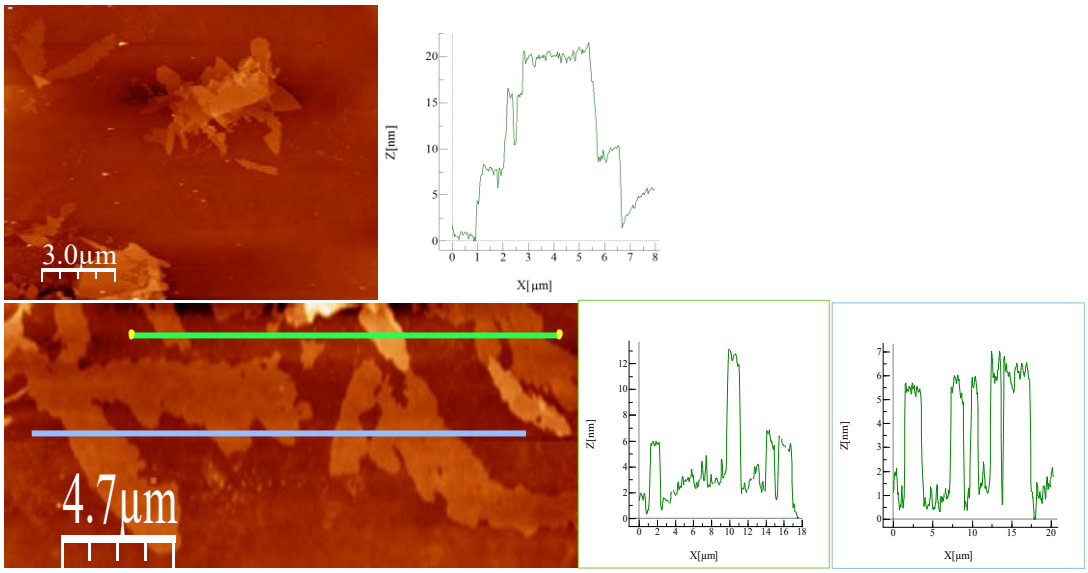

Figure S4. EDX spectra obtained of a representative antimonene flake analysed by TEM.

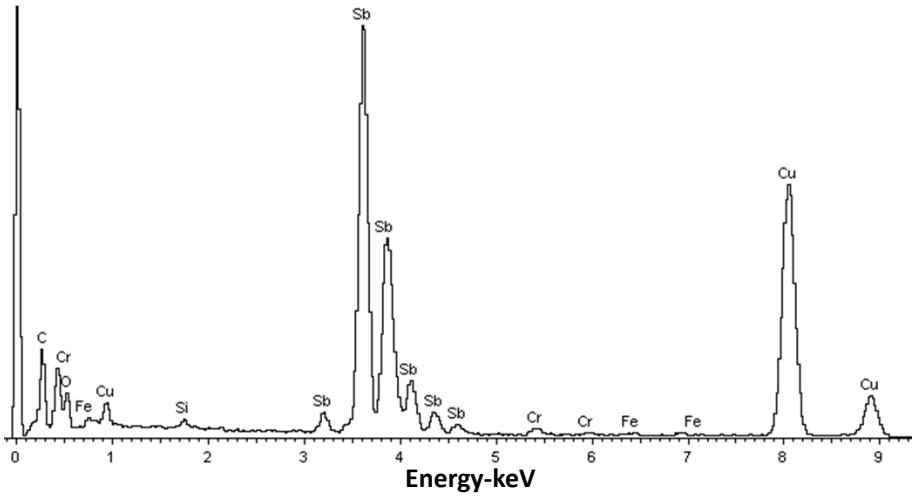

Figure S5. EDX spectra obtained of 36 ng antimonene/SPE surface by SEM.